

REMARKS

Reconsideration and allowance of the subject application in view of the foregoing amendments and the following remarks is respectfully requested.

By this Amendment, independent claims 1, 12, 23, and 24 are amended. Applicants respectfully submit, however, that the claims are not narrowed by such an amendment since such amendment only makes explicit that which was implicitly recited in the original claims.

Claims 1-24 stand rejected under 35 USC 103(a) over *Cooper* (US Pub 2002-0044531) in view of one or more of *An* (US Pub 2002-0002709), *Saunders et al.* (US 6,351,733), *Caviedes et al.* (US 2004/0012675), and *Kahan et al.* (US 2006/0110067). These rejections are respectfully traversed, original and amended claims believed to be patentable over the applied art for the failure of the applied art to not only disclose, teach or suggest all of Applicants' recited claim features, but in addition fails to present any apparent reason to combine references or modify prior art to create the Applicants' allegedly obvious claim elements.

Claims 1-5 and 7 are patentable over Cooper in view of An

The Office Action (OA) alleges that the combination of *Cooper* and *An* disclose, teach or suggest all of Applicants' recited claim features and that it would have been obvious to combine or modify these references to create the Applicants' allegedly obvious claim elements. As amended, independent claim 1, recites, *inter alia*, a method of measuring transmission quality of multimedia data. Based upon the amended claim, Applicants respectfully disagree with both allegations.

Cooper appears to relate to a method of measuring channel quality of an IP network by the transmitter inserting data patterns into an echo request message which the receiver echoes back to the transmitter. The transmitter compares the transmitted pattern with the received pattern, measuring the bit slicer error to characterize the channel quality (*see Abstract and paragraph [0042]*).

An on the other hand, appears to only relate to a communication system and method for propagating multimedia data over a local TV broadcasting channel to a plurality of customers (*see Abstract and paragraph [0001]*), wherein a broadcast applying signal can include a packet for transferring multimedia data including a multimedia data code and checksum code [0053] for checking error of transmission [0053].

Applicants respectfully submit that the alleged combination of *Cooper* and *An*, taken as a whole, does not suggest Applicants' amended claimed method, at least because:

- 1) The asserted combination of references does not teach or suggest all of Applicants' claim features; and
- 2) The grounds of rejection constitute an improper reconstruction of Applicants' claimed invention.

The OA alleges that *Cooper* at paragraphs [0028] and [0058], discloses Applicants' step (c) of "estimating, at the transmitter, the multimedia data played at the receiver using the error information received from the receiver." Applicants respectfully submit, however, that *Cooper* does not estimate the multimedia data received at the receiver. On the contrary, the data pattern in the echo reply message received by *Cooper's* transmitter is not "information on errors occurring during the multimedia data transmission," that is, error information on the original

multimedia data transmission from the transmitter to the receiver, as recited in step b), but is the exact data that was transmitted to the receiver, and now makes a round trip back to the transmitter.

In *Cooper*, an error may occur while the ICMP (Internet Control Message Protocol) echo reply is sent back from the receiver to the transmitter. Consequently, the transmitter may not know what kinds of errors occurred to the signal received by the receiver by examining the echo reply. Furthermore, the ICMP message is never intended to send multimedia data which the receiver is supposed to play for a user. Thus, it is impossible to estimate the erroneous multimedia data which a user would watch in *Cooper*.

Applicants respectfully submit that *Cooper* appears mainly to teach methods for measuring the quality of a radio frequency channel [0002]. If there are multiple channels [0003], *Cooper* may generate a different reference signal for each data path [0005]. Applicants' method is distinguished from *Cooper* in that the error information is about the errors that occur in the transmission of the multimedia data, when the data is sent from the transmitter to the receiver. Indeed, *Cooper* fails to disclose, teach, or suggest estimating received data or measuring multimedia quality of the receiver based upon the estimated received data because the error may occur while the ICMP echo reply is sent back from the receiver to the transmitter.

Furthermore, in *Cooper*, the receiver always returns the ICMP echo reply, which includes a reference signal, no matter whether there is a transmission error or not. Consequently, it is a very inefficient and inaccurate way to measure the multimedia quality of the receiver. Accordingly, Applicants respectfully submit, therefore, that Applicants' recited method is distinguished from *Cooper* in that *Cooper* fails to disclose, teach, or suggest at least steps (b) - (d), of claim 1.

In addition, *Cooper* appears to disclose wherein the transmitter sends an ICMP (Internet Control Message Protocol) echo request and the receiver sends back the ICMP echo reply, which includes a reference signal, to the transmitter. In other words, the receiver always sends back all the data it receives. The transmitter then measures a bit slicer error of the ICMP echo reply [0015, 0016], characterizes the channel quality, and checks the bit error occurrence. *Cooper's* transmitter is not concerned about the multimedia quality, but rather, appears to be only interested in measuring the channel quality. Applicants, on the other hand recite, wherein the

receiver determines the bit error occurrence and if a transmission error occurs, the receiver sends the error information to the transmitter. As disclosed and recited by applicants, the goal of the transmitter is to measure the multimedia quality of the receiver.

Furthermore, regarding the Examiner's reliance on *An* to disclose Applicants' step (b) of transmitting, by a receiver, information on errors occurring during multimedia data transmission through a return channel to the transmitter, Applicants respectfully submit that the combination of *Cooper* and *An* appears to be based on improper hindsight reasoning.

For the Examiner to establish a *prima facie* case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Furthermore, when the alleged combination of references is rendered inoperative based upon that combination, the Examiner has failed to provide a *prima facie* case of obviousness.

As presented above, *Cooper* relies upon a comparison of the transmitted data pattern and the data pattern in the echo reply message to determine the channel quality. *An* appears to disclose, in paragraph [0053], wherein a checksum code is transmitted from the receiver back to the transmitter. The OA alleges, on page 3 of the OA, that it would have been obvious to one or ordinary skills in the art at the time of invention to modify the method of *Cooper* to include receiver receiving the multimedia data from the transmitter as taught by *An* in order to provide a receiver for receiving the broadcast applying signal from the broadcasting control center.

Applicants respectfully submit that replacing *Cooper*'s reply echo message which made a round trip from the transmitter to the receiver, with the checksum code of *An*, would render the channel quality determination logic of *Cooper* inoperative for its intended purpose. The transmitted checksum code as taught by *An* would render *Cooper*'s quality determination circuit inoperable because *Cooper* would be unable to compare the originally transmitted message with the received message.

Furthermore, combining *Cooper*'s reply echo request/reply with the checksum code of *An* fails to remedy the deficiencies of *Cooper*. Fig. A shows the structure of ICMP echo request/reply and Fig. B shows the IP header. As can be seen, the ICMP echo request/reply already has checksum fields. Combining the *Cooper*'s method and *An*'s checksum would be still

the *Cooper's* method. In *Cooper*, the transmitter knows whether an error occurred while the ICMP echo request is transmitted to the receiver. It also knows whether an error occurred while the ICMP echo reply is transmitted to the transmitter. The transmitter can also determine how many errors occurred by measuring the bit slice error. However, for the aforementioned reason, it is not possible to estimate the received signals in *Cooper*.

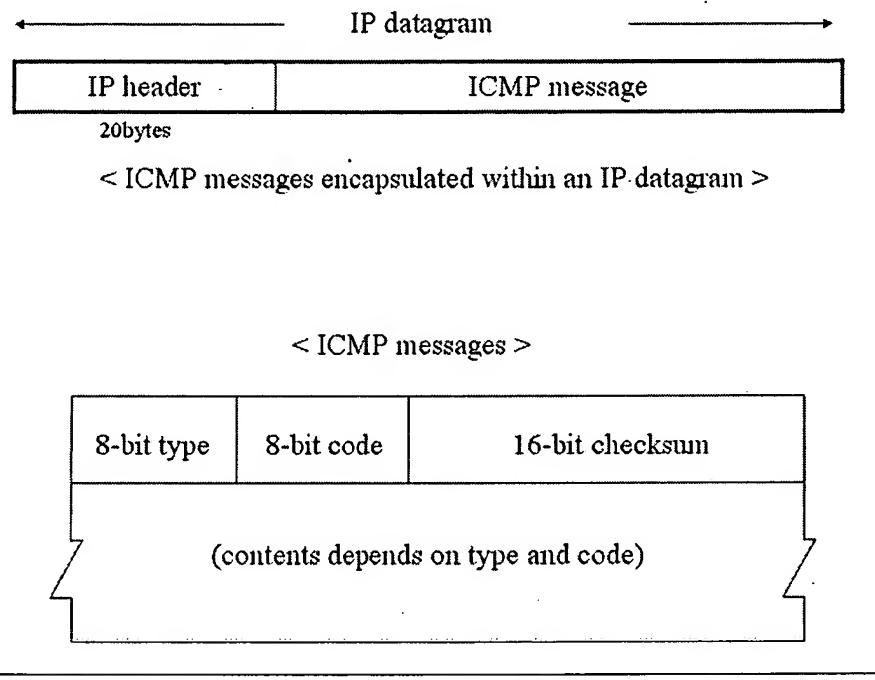


Fig. A. Structure of the ICMP echo request/reply.

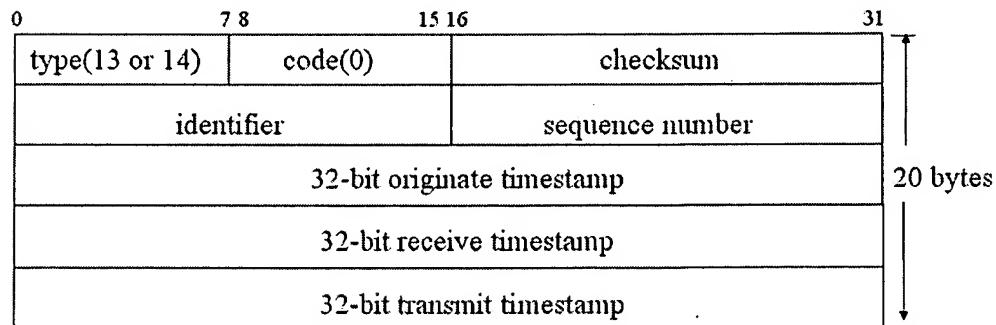


Fig. B. Structure of the IP header of the ICMP echo request/reply.

Thus, Applicants respectfully submits that independent claim 1 is patentable over the alleged combination of *Cooper* and *An* based upon the failure of the alleged combination of

references to disclose, teach, or suggest each and every feature of claim 1, as well as for the impermissible combination of *Cooper* and *An*. Claims 4-5 and 7 are likewise patentable at least based on their dependency on an allowable base claim, as well as for additional features they recite.

Claim 2, for example, recites wherein the error information is transmitted to the transmitter through the return channel “only when a transmission error of the multimedia data is detected.” In the Examiner’s Notes regarding claim 2 on page 3 of the OA, the Examiner appears to have ignored the term “only,” as recited in the claim. Unlike the applied references, which appear to disclose transmitting an Echo Reply message (*Cooper*), or a checksum code (*An*), regardless of whether errors are detected or not, Applicants recite wherein error information is only transmitted when a transmission error is detected.

Furthermore, Applicants disclose wherein the receiver may apply an error concealment technique to improve multimedia (video) quality and the transmitter needs this information on the error concealment technique to accurately estimate the received data. The receiver of *Cooper*, on the other hand, never applies an error concealment technique to the ICMP echo request. On the contrary, it just sends back what it receives (the ICMP echo reply). No nodes in the Internet apply an error concealment technique, though they may apply error correction techniques (e.g., Forward Error Correction), which is completely different from an error conceal technique.

Regarding claim 4, Applicants respectfully submit that cited paragraphs [0046-0049] and Fig. 4 fail to disclose, teach, or suggest wherein the step (b) is performed in such a way as to “transmit information on the employed error concealment technique and error information to the transmitter through the return channel.” The cited text appears to only disclose wherein the echo reply includes an identifier and sequence number with the echo request to identify the specific data pattern unique to the channel characteristic being measured (see paragraph [0046]). The nodes which exchange the ICMP echo request/reply never apply an error concealment technique to the ICMP message.

Regarding claim 5, the transmitter in *Cooper* may not know what kind of signal was received by the receiver since an error can occur to the ICMP message while the ICMP echo reply is sent back from the receiver to the transmitter. Consequently, the transmitter can not estimate the received signal using the ICMP echo reply.

Regarding claim 7, in Cooper, the ICMP echo request is not multimedia data, but a reference signal [0005] which is carefully designed to measure the channel quality. The ICMP message is never intended to send multimedia data which the receiver is supposed to play for a user.

Accordingly, withdrawal of the rejection of claims 1-5 and 7 over *Cooper* and *An* is respectfully requested.

Claims 6, 8, 9, 11-19, 22 and 24 are patentable over Cooper in view of An and Saunders

Claims 6, 8, 9, and 11 depend from claim 1, and as discussed above, Applicants respectfully submit that independent claim 1 is patentable over *Cooper* in view of *An*. Applicants further submit that *Saunders* appears to only relate to enhancement of a desired portion of the audio signal for individual listeners (*see column 1, lines 15-17*) and fails to remedy the deficiencies of *Cooper* and *An*, as present above in regards to claim 1. Accordingly, claims 6, 8, 9, and 11 are patentable over the alleged combination of references at least in view of their dependence on claim 1.

Applicants further submit that independent claim 12 is similar to claim 1, reciting “an estimation unit estimating the received data received at the receiver using the returned error information.” As presented above, nowhere does the alleged combination of *Cooper*, *An*, and *Saunders* discloses, teaches, or suggests at least this feature.

Therefore, Applicants respectfully submit that the alleged combination of references fails to render obvious claims 6, 8, 9, 11-19, 22 and 24. Withdrawal of the rejection is respectfully requested.

Claims 10, 20, and 21 are patentable over Cooper, An, and Caviedes

Claims 10, 20, and 21 depend variously from independent claims 1 and 12. Applicants respectfully submit that, as discussed above, independent claims 1 and 12 are patentable over all allowable combinations of *Cooper*, *An*, and *Saunders*. Applicants further submit that *Caviedes*, at paragraph [0002], appears to only relate to “a method and system for estimating the quality of pictures without referring to the source video data” (emphasis added). Because *Caviedes* does not base its quality analysis on the originally transmitted data, *Caviedes* has no need to, and indeed fails to disclose transmission of any error information back to the transmitter.

Accordingly, *Caviedes* fails to remedy the deficiencies of *Cooper* and *An* in respect to claims 1 and 12 reciting transmitting error information back to the transmitter. Accordingly, claims 10, 20, and 21 are patentable over the alleged combination of references at least in view of their dependence on claim 1.

Claim 23 is patentable over Cooper, An, and further in view of Kahan

The rejection of claim 23 under 35 USC 103(a) as being unpatentable over *Cooper* in view of *An* and further in view of *Kahan* et al. (US 2006/0110067) is respectfully traversed.

Kahan appears to only relate to “a system and method for measuring video quality of a video image, [...] wherein the decoder is adapted to compare display attributes of the received video image with creation attributes of the original video image” (see Abstract). Notwithstanding any assertions made by the Examiner, *Kahan* appears to only describe measuring video quality and nowhere discloses, teaches, or suggests “measuring transmission quality of multimedia data” (emphasis added), as recited in claim 23. Furthermore, *Kahan* appears to do all processing on the receiver side and is therefore distinguished from Applicants’ claim 23 that recites wherein the transmitter measures the transmission quality of the received data by using the set of parameters and reference data.

Conclusion

All objections and rejections having been addressed, it is respectfully submitted that the present application should be in condition for allowance and a Notice to that effect is earnestly solicited. Early issuance of a Notice of Allowance is courteously solicited.

The Examiner is invited to telephone the undersigned, Applicants' attorney of record, to facilitate advancement of the present application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,

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